



**US Army Corps
Of Engineers**
Wilmington District

PUBLIC NOTICE

Issue Date: 22 May 2007
Comment Deadline: 21 June 2007
Corps Action ID #: 200630816

The Wilmington District, U.S. Army Corps of Engineers has received an application from Duke Energy seeking Department of the Army authorization to permanently impact approximately 2,564 linear feet of stream channel and 3.38 acre of wetlands and temporarily impact linear feet of stream channels and 4.93 acres of wetlands associated with the construction of a seismic stability dam adjacent to the existing Catawba Dam of Lake James, in Marion, McDowell County, North Carolina.

Specific plans and location information are described below and shown on the attached plans. This Public Notice and all attached plans are also available on the Wilmington District Web Site at www.saw.usace.army.mil/wetlands

Applicant: Duke Energy
Attn: Mr. Jonathan Wise
P.O. Box 1006 (Mail Code EC 11Y)
Charlotte, North Carolina 28201-1006

AGENT (if applicable): Devine Tarbell & Associates
Attn: Mr. James McRacken
400 S. Tryon Street WC2401
Charlotte, North Carolina 28285

Authority

The Corps will evaluate this application and decide whether to issue, conditionally issue, or deny the proposed work pursuant to applicable procedures of Section 404 of the Clean Water Act (33 U.S.C. 1344).

Location

The proposed project known as the Catawba Dam Embankment Seismic Stability Improvements (ESSI) is located on Lake James, near Benfield Landing Road, near Marion, in McDowell County, North Carolina (35.7342°N, 81.8882°W). The site contains wetlands and stream channels with indicators of ordinary high water marks that are tributaries to the Catawba River. The Catawba River ultimately flows to the Atlantic Ocean through the Santee-Cooper River system in South Carolina.

Existing Site Conditions

Much of the Catawba Dam ESSI Project area has been modified and does not present the types of natural communities expected if the habitats have been left undisturbed. The impoundment of Lake James, including the historic construction of the Catawba, Paddy Creek, and Linville dams, has changed the local topography and hydrology. Associated construction of the nearby Linville Dam powerhouse, substation, power lines, roadways, and river bypass areas has also significantly affected the natural environment.

The more natural communities are found on the steeper hillsides and in the wetter drainage bottoms near the streams. The major natural communities found in the project area are stream riparian and upland habitats. The stream riparian areas and the wetlands are typically composed of the following: tulip poplar (*Liriodendron tulipifera*); red maple (*Acer rubrum*); river birch (*Betula nigra*); American sycamore (*Platanus occidentalis*); red mulberry (*Morus rubra*); mockernut hickory (*Carya tomentosa*); and sweetgum (*Liquidambar styraciflua*). Corresponding understory species were ironwood (*Carpinus caroliniana*); American holly (*Ilex opaca*); silky dogwood (*Cornus amomum*); alder (*Alnus serrulata*); and Chinese privet (*Ligustrum sinense*). Other common plants included giant cane (*Arundinaria gigantea*), browntop (*Microstegium vimineum*), Japanese honeysuckle (*Lonicera japonica*), soft rush (*Juncus effusus*), bog rush (*Juncus biflorus*), dotted smartweed (*Polygonum punctatum*), shallow sedge (*Carex lurida*), netted chainfern (*Woodwardia areolata*) and yellow violet (*Viola pensylvanica*).

In the adjacent uplands, the habitat consists of a mix of white pine (*Pinus strobus*), Virginia pine (*Pinus virginiana*), tulip poplar, sweetgum, and red maple. Other canopy species present were black cherry (*Prunus serotina*), American beech (*Fagus grandifolia*), river birch, and southern red oak (*Quercus falcata*). Understory trees and shrubs included ironwood, Chinese privet, eastern hemlock (*Tsuga canadensis*), flowering dogwood (*Cornus florida*), American holly, red cedar (*Juniperus virginiana*), and rhododendron (*Rhododendron maximum*). The common herbaceous species observed included Japanese honeysuckle, Christmas fern (*Polystichum acrostichoides*), giant cane, violets (*Viola* sp.) and blackberry (*Rubus* sp.).

The soil series found within the drainage area and the adjacent uplands are Biltmore loamy sand and Colvard sandy loam. Biltmore loamy sand is found on zero to five percent slopes and is a well-drained occasionally flooded soil with rapid permeability. This nearly level or gently sloping, mixed, mesic Typic Udipsamments is usually found in Piedmont river valleys of North Carolina. Colvard sandy loam is found on zero to three percent slopes and is a well-drained, occasionally flooded soil with moderately rapid permeability.

During the field assessments, jurisdictional waters of the U.S., including wetlands, within the Catawba ESSI Project boundary, were delineated using the 1987 Corps of Engineers Wetland Delineation Manual. Wetlands were considered present when observations of vegetation, hydrology, and soils indicated that the three-parameter criteria for wetland identification were met. The wetlands found within the Catawba Dam ESSI Project boundary were classified using the U.S. Fish and Wildlife's (USFWS) wetland classification system. During the jurisdictional

waters assessment, seven drainages which are made up of jurisdictional creek and wetland habitats, were observed and documented within the subject property. A description and size of each of the drainage within the ESSI project boundaries is provided below and in Table 1.

Table 1 - Jurisdictional Waters within the Catawba Dam ESSI Project Area

Drainage Name	Total Stream Length (linear feet)	Wetland Type(s)	Total Wetland Area (acres)
Catawba Bypassed Reach	248	PFO/PSS/PEM	6.08
Tributary 1 and Toe Ditch	2024	PFO/PSS/PEM	2.43
Tributary 2	604	NA	NA
Tributary 3	179	PFO/PSS	.07
Tributary 4	588	NA	NA
Tributary 5	166	NA	NA
Shadrick Creek Drainage	1632	PFO	.15
TOTAL	5441		8.73

PFO = Palustrine Forested , PSS = Palustrine Shrub/Scrub , PEM =Palustrine Emergent

The Catawba Bypassed Reach Drainage is located directly downstream of the Catawba Dam and spillway and remains within the Catawba Dam ESSI project boundary for approximately 300 feet downstream of the State Road 126 Bridge over the Catawba River Bypassed Reach. This drainage consists primarily of a large wetland system that was historically the drainage way of the Catawba River, prior to the construction of the Catawba Dam and the rest of the Bridgewater Hydro components. The jurisdictional wetlands associated with this drainage within the ESSI Project Boundary are approximately 6.08 acres and are made up of palustrine forested, shrub/scrub and emergent wetland types. In addition to the jurisdictional wetlands, there are two small first order streams from springheads which merge to form a second order stream prior to flowing into the drainage's wetland complex. The jurisdictional streams associated with this drainage measure approximately 248 linear feet. Furthermore, the Catawba River Bypassed Reach drainage is supplemented with surface waters by the flows out of the Tributary #1 Drainage to the north. The soil series found within the drainage area and the adjacent uplands are Biltmore loamy sand and Colvard sandy loam. The hydrology indicators found in the Catawba Bypassed Reach drainage jurisdictional wetland area consisted of standing surface water and saturated soils. In addition, sediment deposits, drainage patterns, oxidized root channels, and water stained leaves were observed during the field wetland assessment.

The Tributary #1 Drainage is located directly adjacent to and east of the Catawba Dam where a portion flows down the east abutment of the dam. This drainage consists of the Catawba Dam toe drain, four small first order perennial streams with several jurisdictional wetlands located at the head of or adjacent to the streams. The jurisdictional streams associated with this drainage measure approximately 2024 linear feet. The first order streams merge at separate points along

the tributary become a second order stream. This second order stream flows towards the south into a jurisdictional wetland, and then exits the wetland and flows approximately 525 feet to where it merges with the Catawba River Bypassed Reach drainage. The jurisdictional wetlands in this drainage within the Project Boundary are associated with the seepage areas along the first order streams (0.08-acres) and a medium sized wetland (2.2-acres) that is located on a terrace above the Catawba River Bypassed Reach Drainage and is made up of palustrine forested, shrub/scrub and emergent wetland types. The hydrology indicators found in this jurisdictional wetland consisted of standing surface water and saturated soils to the surface. In addition, drainage patterns and water-stained leaves were observed during the field wetland assessments.

The remainder of the tributaries are small drainages and usually first and second order stream channels. Some of the tributaries have small (<0.10 acre) wetlands in a headwater landscape position. The Shadrick Creek drainage found within the Catawba Dam ESSI Project boundaries is made up of a first order stream that starts with the Lake James State Park property and flows south until it merges with Shadrick Creek within the ESSI Project boundaries. The first order stream also has two jurisdictional forested wetlands (0.15-acres) associated with seepages along the drainage of this stream. Shadrick Creek is also included in this onsite drainage. Shadrick Creek, an estimated third order stream, enters the Catawba Dam ESSI Project area from the south flowing north from under the adjacent railroad property.

Applicant's Stated Purpose

The purpose of the proposed work as described by the applicant is to construct an earthen embankment dam in front of the existing dam as part of a nationwide effort to increase the safety of dams during potentially catastrophic earthquake events.

Project Description

The Catawba Dam is an existing earthen embankment dam that consists of two embankment sections measuring approximately 1,650 feet (main embankment) and 650 feet (saddle embankment) in length. The main embankment at Catawba Dam has a maximum height of approximately 150 feet above the downstream toe. The saddle embankment has a maximum height of approximately 65 feet. The spillway at Catawba Dam is one of the two uncontrolled spillways for the Bridgewater Hydroelectric Development.

The proposed project is planned to consist of a large and a small earthen counterweight stability berm, which will support the downstream slope of the existing structures during and following the design earthquake. Due to the quantity of soil and material needed for this FERC mandated project, soil areas adjacent to the Catawba Dam will be used as borrow areas. These soils have been tested for suitability and accepted for their use in the construction of the counterweight stability berm. In addition, the materials that will be taken from the existing dam will likely be unsuitable for use in constructing the stability berm because of their high moisture content; however, when practical, these materials are planned to be utilized as backfill in the onsite borrow areas as part of the proposed site reclamation. The berm will be approximately 100 feet thick.

Due to the construction of the stability berm, sediment and erosion control measures, and construction of a haul road to access the borrow material, there will be unavoidable impacts to jurisdictional waters of the U.S. including wetlands. Proposed permanent impacts total 2,564 linear feet of stream channels and 3.38 acres of wetlands. Proposed temporary impacts total 855 linear feet of stream channels and 4.93 acres of wetlands.

Table 2. Proposed Impacts

Drainage	Stream Length Impacted Perm. (linear feet)	Stream Length Impacted Temp. (linear feet)	Wetland Area Impacted Perm. (acres)	Wetland Area Impacted Temp. (acres)
Catawba Bypassed Reach	255	0	0.95	4.80
Tributary 1 and Toe Ditch	2024	0	2.43	0
Tributary 2	165	60	0	0
Tributary 3	120	45	0	0
Tributary 4	0	590	0	0
Tributary 5	0	0	0	0
Shadrick Creek Drainage	0	160	0	0.13
TOTAL	2564	855	3.38	4.93

The majority of the temporary and permanent impacts to jurisdictional areas in Catawba Bypassed Reach Drainage will take place in the large wetland system that starts as seepage at the toe of the spillway wall, and small perennial streams. Of the approximately 5.75 acres of jurisdictional wetland impact located in this drainage, 4.8 acres is temporary and 0.95 acres is permanent. The temporary impacts to jurisdictional wetlands are primarily due to the construction of the four sediment and erosion control basins and temporary haul roads. These basins are to be placed partially within the wetlands on both sides of the bypassed channel. The area between the basins within the channel could be temporarily disturbed due to the need for unrestricted flow in case of the overtopping of the Catawba Spillway. In addition, this will assist in the conveyance of clean water generated by the dewatering of the excavation footprint near the toe of the dam. The applicant is proposing to convert the sediment basins back into jurisdictional wetlands as described in their mitigation plan. In addition to the basins, there will be temporary impacts due to the construction of two temporary haul roads that will be used to assist in the delivery of equipment and handling of sand, stone, and gravel which will be used during the construction of the berm and the hauling of borrow material from the downstream borrow areas. The permanent impacts to wetlands (0.95 acres) in the Catawba River Bypassed Reach Drainage are primarily due to the construction of the berm and the associated spillway and spillway wall, excavation of the toe of the existing dam to replace the alluvium with compacted backfill, and the construction of the permanent roadway access to the toe of the dam.

This entire length of Tributary #1, and all associated wetlands will be permanently impacted by the construction of the stabilization berm due to its close proximity to the existing dam and its location within the proposed footprint of the berm, planned excavation, necessary construction lay-down areas needed, and the reconstruction of toe drain. The size of the jurisdictional wetland impacts within Tributary #1 is approximately 2.43 acres. The majority of the impacts to the jurisdictional wetlands are due to the filling of the left abutment of the dam with the footprint of the new berm, excavation of the toe of the existing dam to replace the alluvium with compacted backfill, construction of the borrow material haul road, and the construction of the contractor work/lay down area.

Proposed impacts to Tributary #2 and #3 are associated with the construction of a haul road. The stream crossings will be designed and constructed as a 34 foot haul road to assist in the transportation of borrow material to the berm construction areas for use during the project. The crossing will be permanently left to provide, at the Lake James State Park's request, a road crossing for park employee access. Proposed permanent impacts to Tributary #2 are 165 linear feet and 120 linear to Tributary #3. The haul road will also temporarily impact 160 linear feet of an unnamed tributary to Shadrick Creek and 0.13 acre of wetlands. The crossing will be removed after the project is completed and returned to original contour and elevations.

Proposed impacts to Tributary #4 are associated with the construction of sediment and erosion control basins. The area uphill of the erosion and sediment control basin will be totally disturbed and utilized as material to construct the stabilization berm. This sediment basin is essential to insure sediments do not impact off site areas, such as the Catawba River Bypassed Reach, which would result in violations of water quality regulations. This basin will be removed after the ESSI Project is completed and the upland areas are stabilized with vegetation. Once that is completed, the perennial streams will be returned to original or better contours and elevations. This is because the existing stream banks are excessively incised (approximately 12 feet in depth).

The applicant is proposing to mitigate for jurisdictional impacts through a combination of on-site and off-site mitigation, and payment into the North Carolina Ecosystem Enhancement Program (NCEEP). The applicant is proposing to mitigate for permanent wetland impacts (3.38 acres) at a 1:1 ratio by creating approximately 3.0 acres of wetlands on the site by excavating uplands adjacent to sediment and erosion control basins that were located in wetlands. The majority of the areas to be excavated, located on both sides of the Catawba River Bypassed Reach, will have been excavated during the construction of the berm. These areas are the location of proposed sediment control basins. Additional excavation will take place to remove portions of the basin walls to be located in jurisdictional areas and adjacent upland habitats to reconnect the temporarily impacted wetlands and the newly excavated uplands to the Catawba River Bypassed Reach's hydrology. The applicant is also proposing to compensate for the remainder of the permanent wetland impacts (0.38 acre) by making payment into NCEEP at a 1.5:1 ratio.

Approximately 2,564 linear feet of jurisdictional streams will be permanently impacted due to the construction of this project. The applicant plans to mitigate for these impacts through a combination of onsite and offsite mitigation. Approximately 485 linear feet of new surface waters will be created once a new valve is installed in the existing spillway, which will provide new flows to the bypassed reach of between 50 to 75 cfs. This flow will result in a new channel between the spillway and the new dam access road to be installed. The applicant is requesting an

onsite stream mitigation ratio of 1:1 due to the fact that a majority of the streams to be permanently impacted by the projects construction were fed by seepage from the Catawba Dam and this source of water will be cut off or captured into the seepage collection ditch for monitoring purposes as required by FERC. The applicant is also proposing to mitigate for stream impacts by enhancing two off-site stream channels (South Creek Vineyards and South Muddy Creek). The applicant has also contacted NCEEP to determine if mitigation credits are available in the event that the off-site options are not viable.

Other Required Authorizations

This notice and all applicable application materials are being forwarded to the appropriate State agencies for review. The Corps will generally not make a final permit decision until the North Carolina Division of Water Quality (NCDWQ) issues, denies, or waives State certification required by Section 401 of the Clean Water Act (PL 92-500). The receipt of the application and this public notice combined with appropriate application fee at the North Carolina Division of Water Quality central office in Raleigh will constitute initial receipt of an application for a 401 Water Quality Certification. A waiver will be deemed to occur if the NCDWQ fails to act on this request for certification within sixty days of the date of the receipt of this notice in the NCDWQ Central Office. Additional information regarding the Clean Water Act certification may be reviewed at the NCDWQ Central Office, 401 Oversight and Express Permits Unit, 2321 Crabtree Boulevard, Raleigh, North Carolina 27604-2260. All persons desiring to make comments regarding the application for certification under Section 401 of the Clean Water Act should do so in writing delivered to the North Carolina Division of Water Quality (NCDWQ), 2321 Crabtree Boulevard, Raleigh, North Carolina 27604-2260 Attention: Ms Cyndi Karoly by June 21, 2007.

Essential Fish Habitat

This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. The Corps' initial determination is that the proposed project will not adversely impact EFH or associated fisheries managed by the South Atlantic or Mid Atlantic Fishery Management Councils or the National Marine Fisheries Service.

Cultural Resources

The Corps has consulted the latest published version of the National Register of Historic Places and is not aware that any registered properties, or properties listed as being eligible for inclusion therein are located within the project area or will be affected by the proposed work. Presently, unknown archeological, scientific, prehistoric, or historical data may be located within the project area and/or could be affected by the proposed work.

Endangered Species

For instances in which we have sufficient information to make a “no-effect” determination, the Corps has reviewed the project area, examined all information provided by the applicant and consulted the latest North Carolina Natural Heritage Database. Based on available information, the Corps has determined pursuant to the Endangered Species Act of 1973, that the proposed project will have no effect on federally listed endangered or threatened species or their formally designated critical habitat. USFWS has concurred in writing that the proposed project will have no effect on the federally threatened Bald Eagle and not likely to adversely effect the federally threatened Dwarf-flowered Heartleaf based upon their coordination with the applicant and the Federal Energy Regulatory Commission (FERC).

Evaluation

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values (in accordance with Executive Order 11988), land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. For activities involving the discharge of dredged or fill materials in waters of the United States, the evaluation of the impact of the activity on the public interest will include application of the Environmental Protection Agency’s 404(b)(1) guidelines.

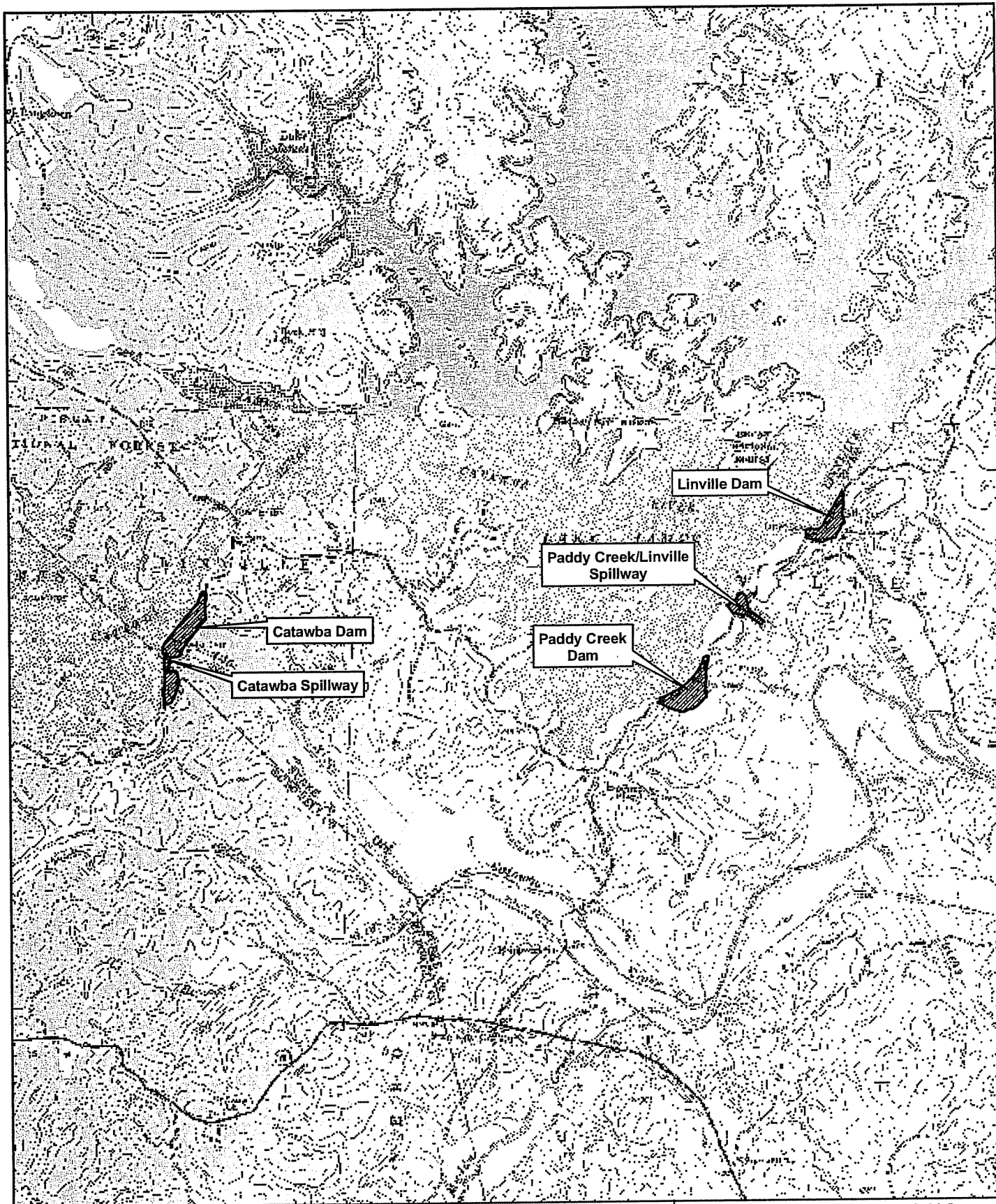
Commenting Information

The Corps of Engineers is soliciting comments from the public; Federal, State and local agencies and officials, including any consolidate State Viewpoint or written position of the Governor; Indian Tribes and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment (EA) and/or an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA). Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. Requests for a public hearing shall be

granted, unless the District Engineer determines that the issues raised are insubstantial or there is otherwise no valid interest to be served by a hearing.

Written comments pertinent to the proposed work, as outlined above, will be received by the Corps of Engineers, Wilmington District, until 5pm, June 21, 2007. Comments should be submitted to Amanda Jones, Asheville Regulatory Field Office, 151 Patton Avenue, Room 208, Asheville, North Carolina 28801.



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists



400 South Tryon Street
Suite 2401
Charlotte, NC 28285



Dams & Spillways

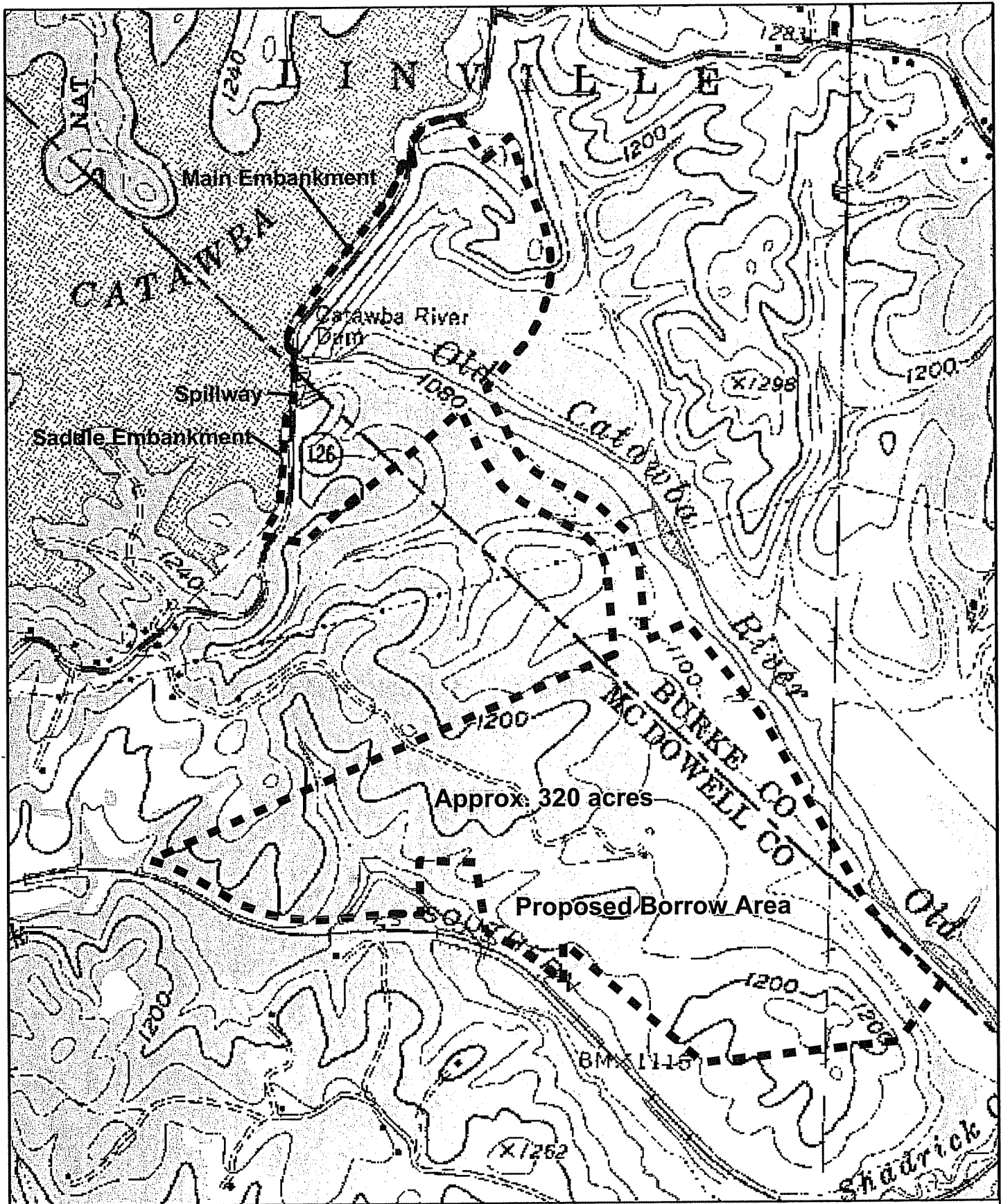
3,000 0 3,000
Feet

Source data: Ashford, Oak Hill, Marion East, Glen Alpine, NC
USGS 1:24,000-scale topographic maps

DUKE ENERGY CAROLINAS, LLC
BRIDGEWATER HYDRO PROJECT

Figure 2. Dam Location Map

SHEET NO.	DATE	REV.
SHEET 1 OF 1	03-28-07	



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists



400 South Tryon Street
Suite 2401
Charlotte, NC 28285

----- Project boundary

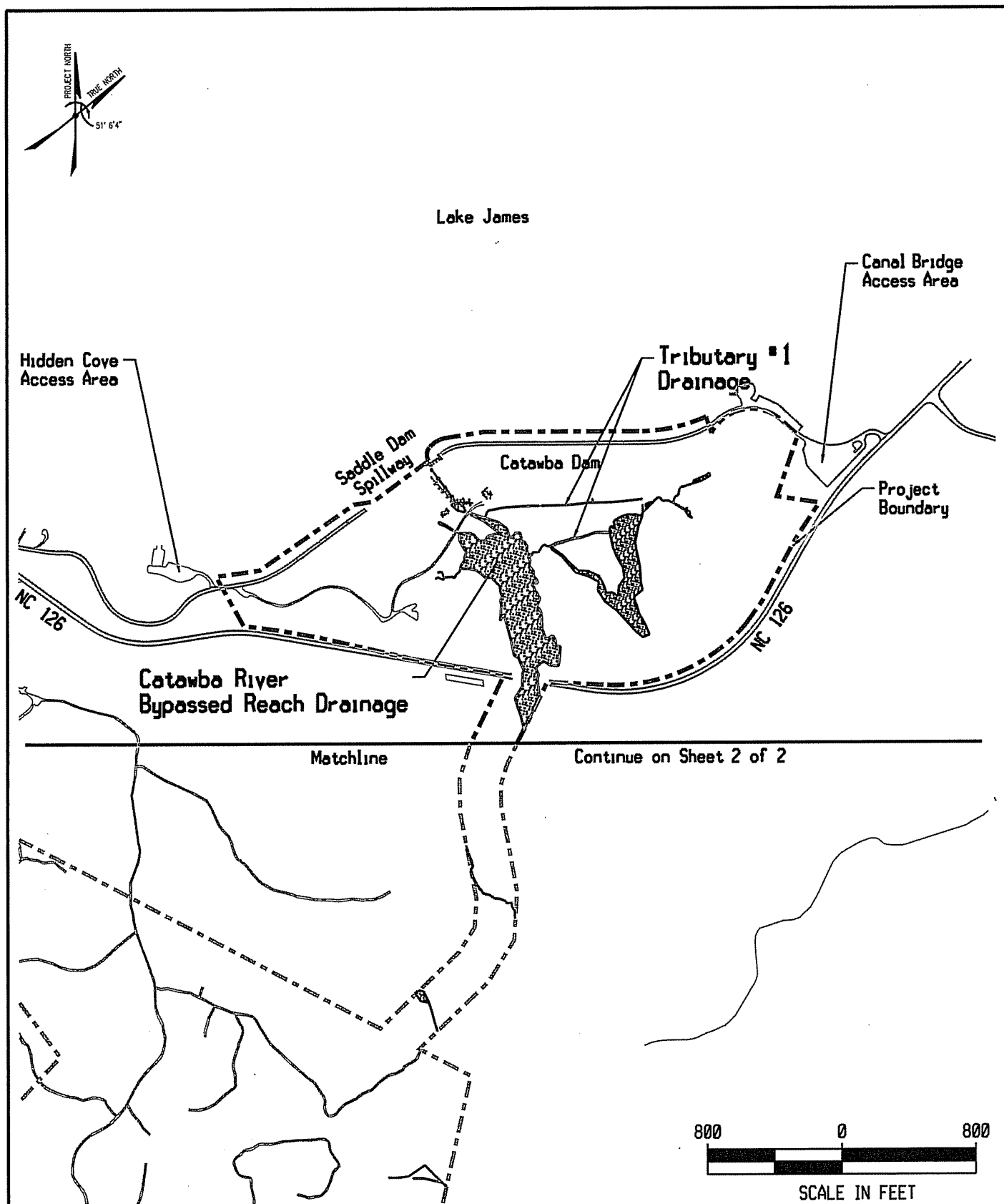
1,000 0 1,000
Feet

Source data: Oak Hill and Glen Alpine, NC, 1:24,000-scale USGS topographic maps

DUKE ENERGY CAROLINAS, LLC
BRIDGEWATER HYDRO PROJECT

Catawba Dam ESSI
Figure 3. Project Boundary Map

SHEET NO.	DATE	REV
SHEET 1 OF 1	03-28-07	



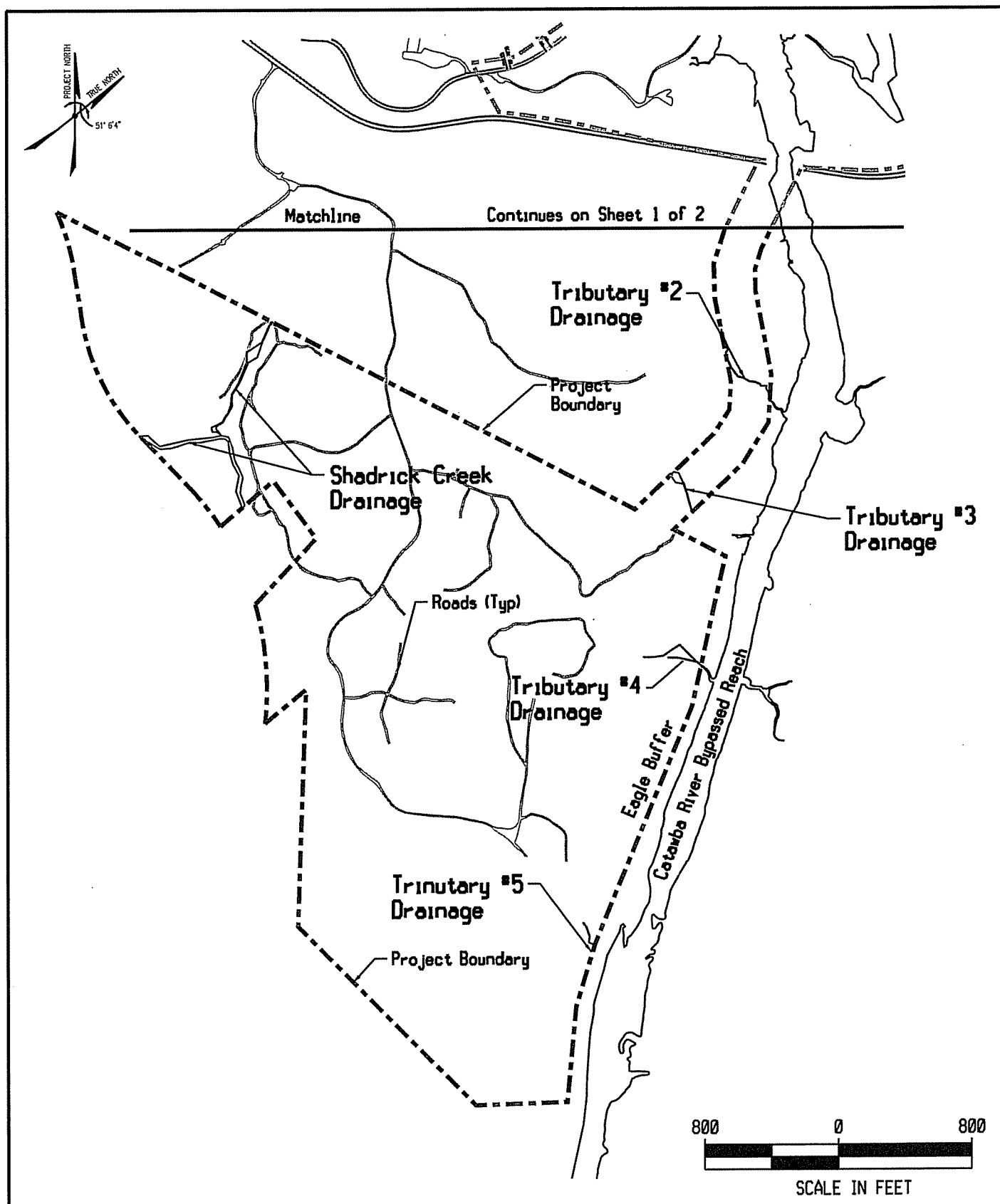
Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

400 South Tryon Street • Charlotte, NC 28285

DUKE ENERGY CAROLINAS, LLC.
BRIDGEWATER HYDRO PROJECT

Figure 5
Drainage Location Map
1 of 2

FILE NAME	DATE	REV
Figure 5	04-11-07	0



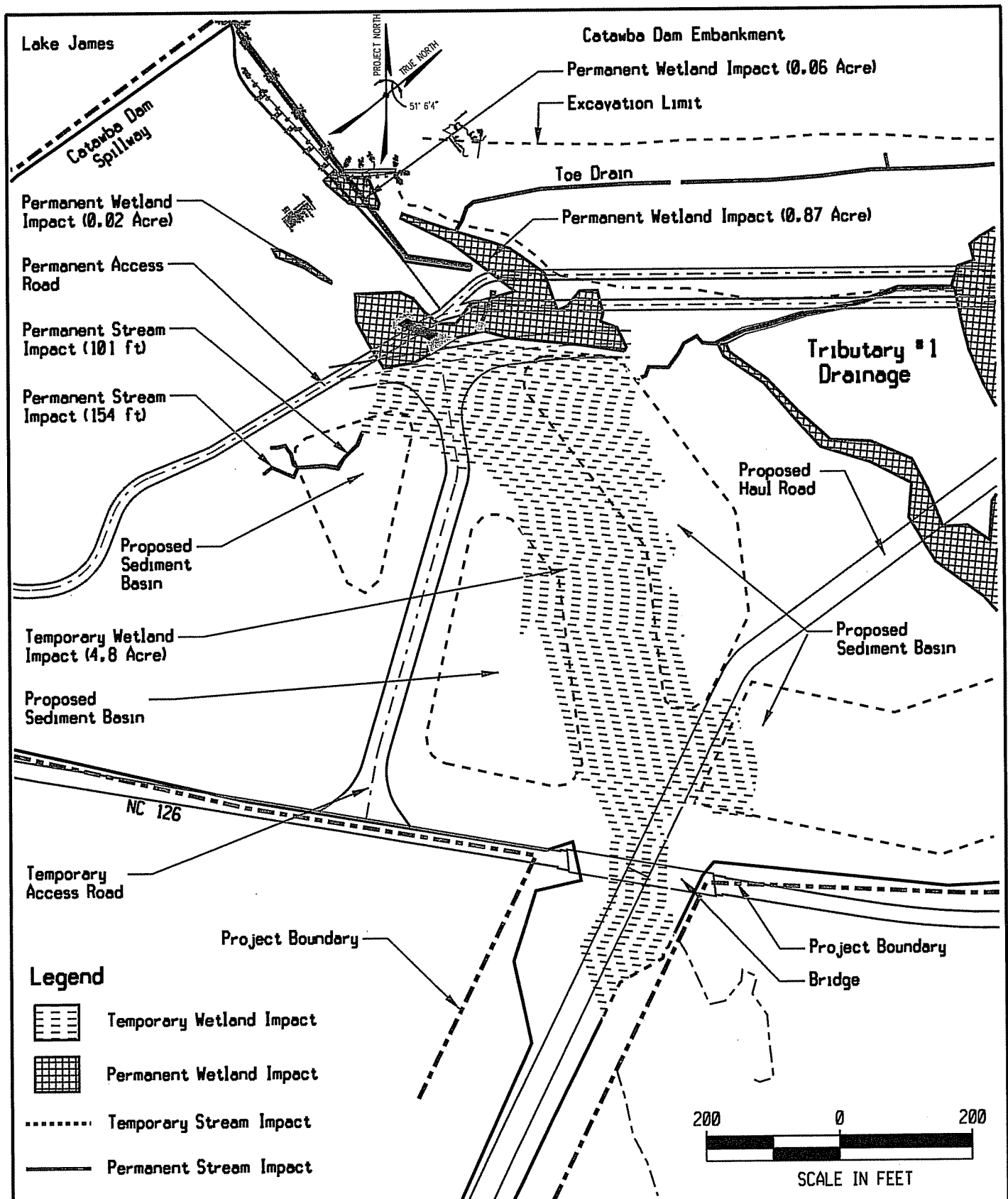
Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

400 South Tryon Street • Charlotte, NC 28285

DUKE ENERGY CAROLINAS, LLC.
BRIDGEWATER HYDRO PROJECT

Figure 5
Drainage Location Map
2 of 2

FILE NAME	DATE	REV
Figure 5	04-11-07	0



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

400 South Tryon Street • Charlotte, NC 28285

DUKE ENERGY CAROLINAS, LLC.
BRIDGEWATER HYDRO PROJECT

Figure 12
Catowba River
Bypassed Reach Drainage
Impact Map

FILE NAME

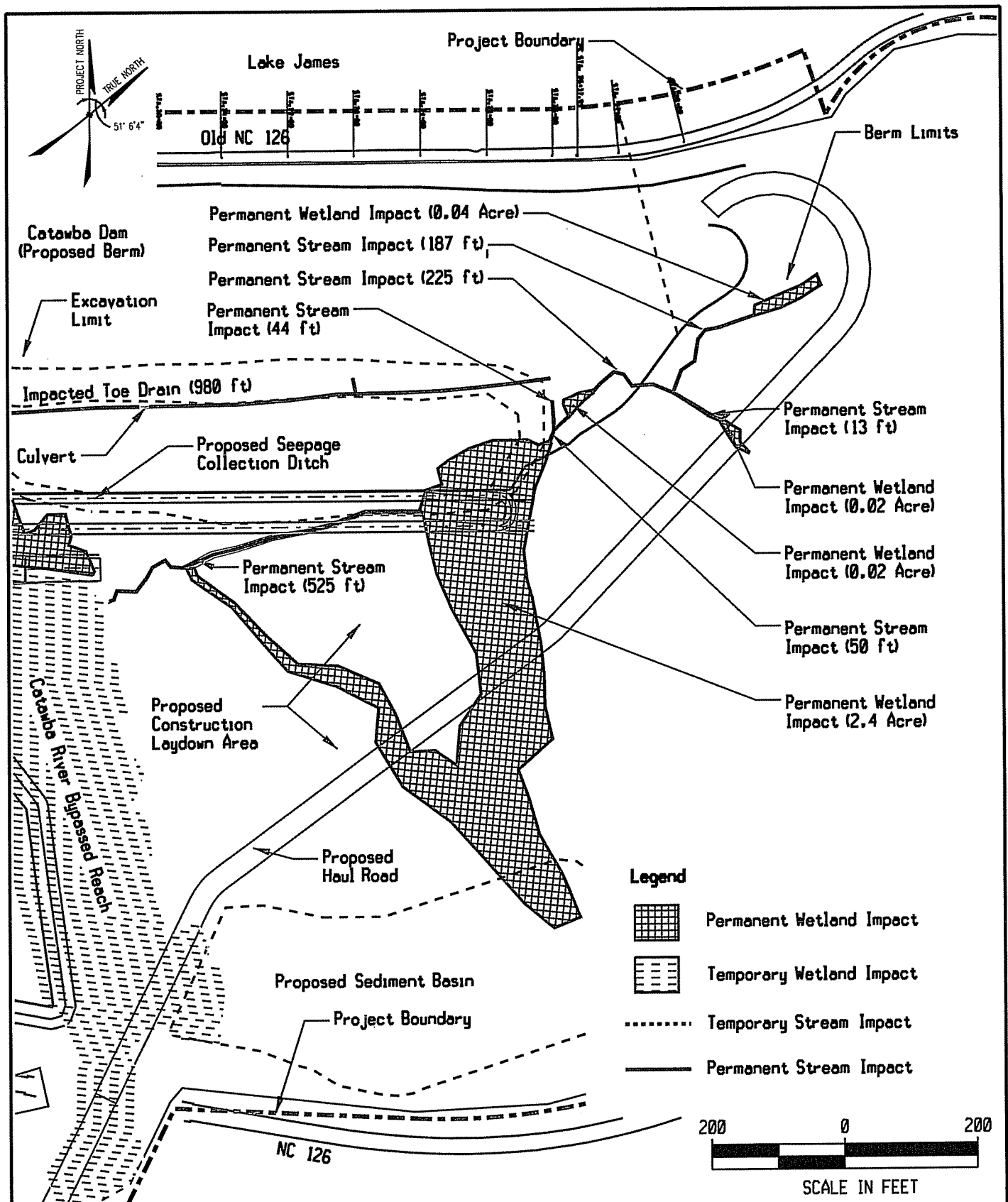
Figure 12

DATE

04-11-07

REV

0



Devine Tarbell & Associates, Inc.

Consulting Engineers, Scientists, & Regulatory Specialists

400 South Tryon Street • Charlotte, NC 28265

**DUKE ENERGY CAROLINAS, LLC.
BRIDGEWATER HYDRO PROJECT**

**Figure 13
Tributary #1
Impact Map**

FILE NAME

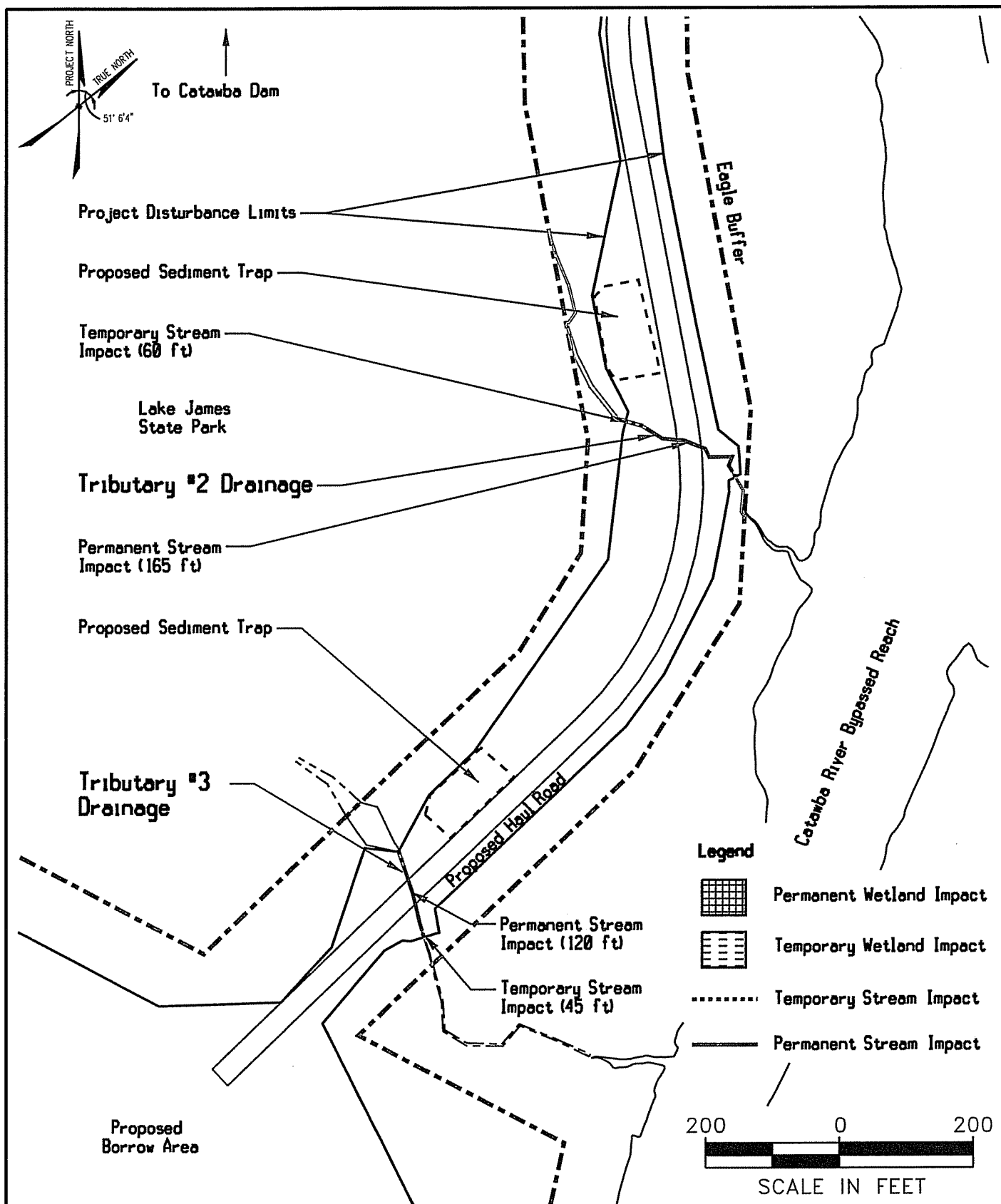
Figure 13

DATE

04-11-07

REV

0



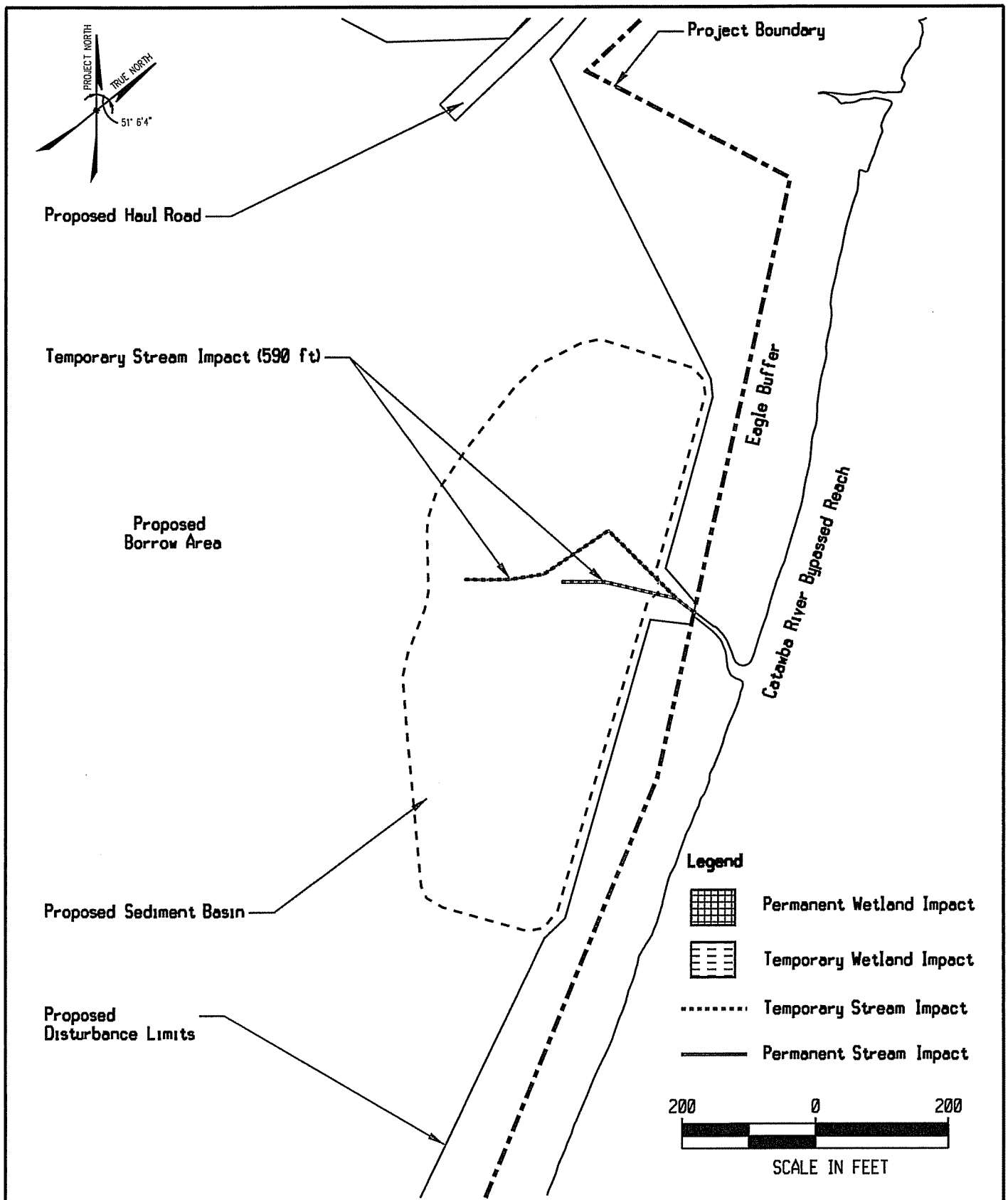
Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

400 South Tryon Street • Charlotte, NC 28285

DUKE ENERGY CAROLINAS, LLC.
BRIDGEWATER HYDRO PROJECT

Figure 14
Tributary #2 & #3
Impact Map

FILE NAME	DATE	REV
Figure 14	04-11-07	0



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

400 South Tryon Street • Charlotte, NC 28285

DUKE ENERGY CAROLINAS, LLC.
BRIDGEWATER HYDRO PROJECT

Figure 15
Tributary #4
Impact Map

FILE NAME

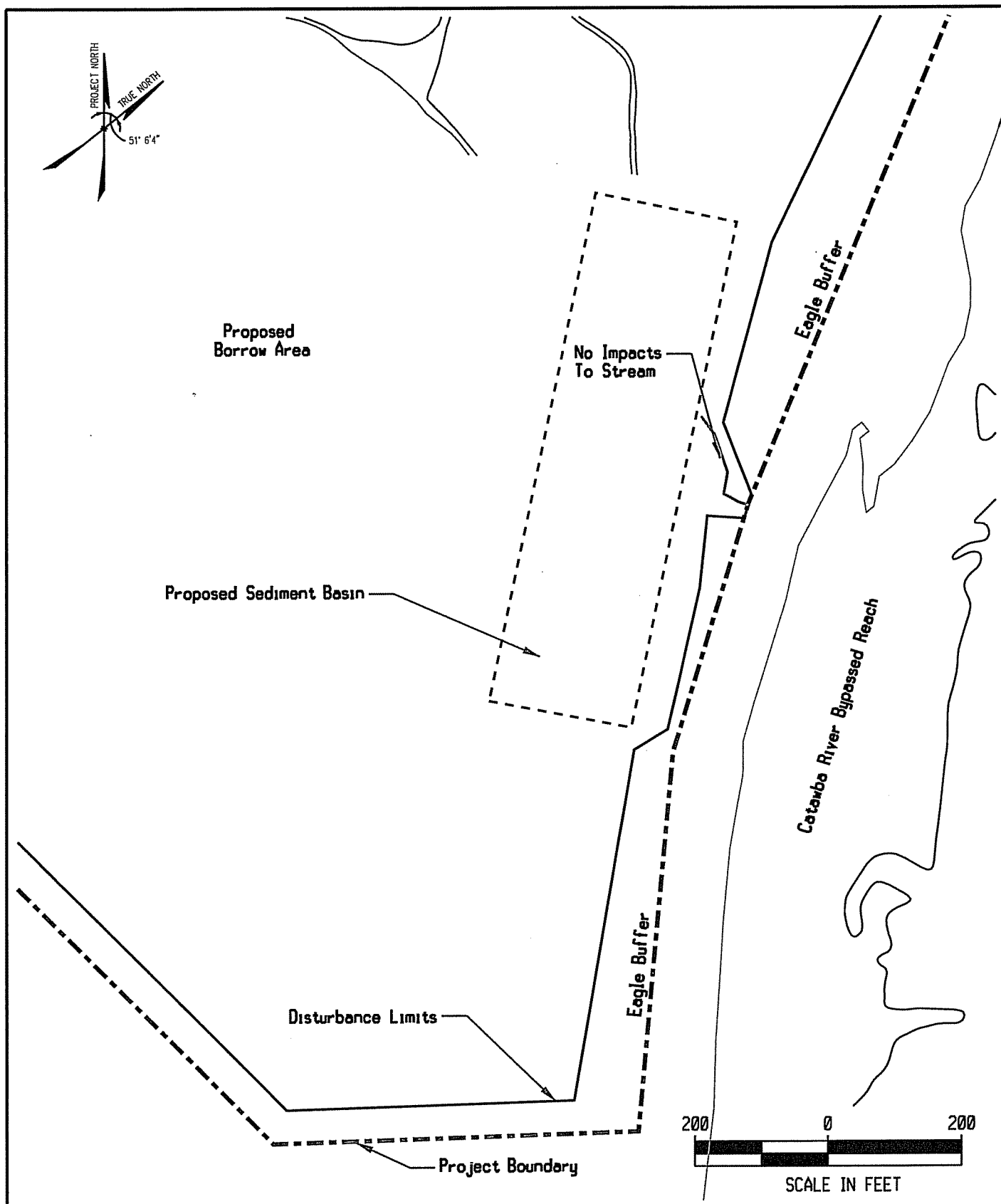
Figure 15

DATE

04-11-07

REV

0



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

400 South Tryon Street • Charlotte, NC 28285

DUKE ENERGY CAROLINAS, LLC.
BRIDGEWATER HYDRO PROJECT

Figure 16
Tributary #5
Impact map

FILE NAME

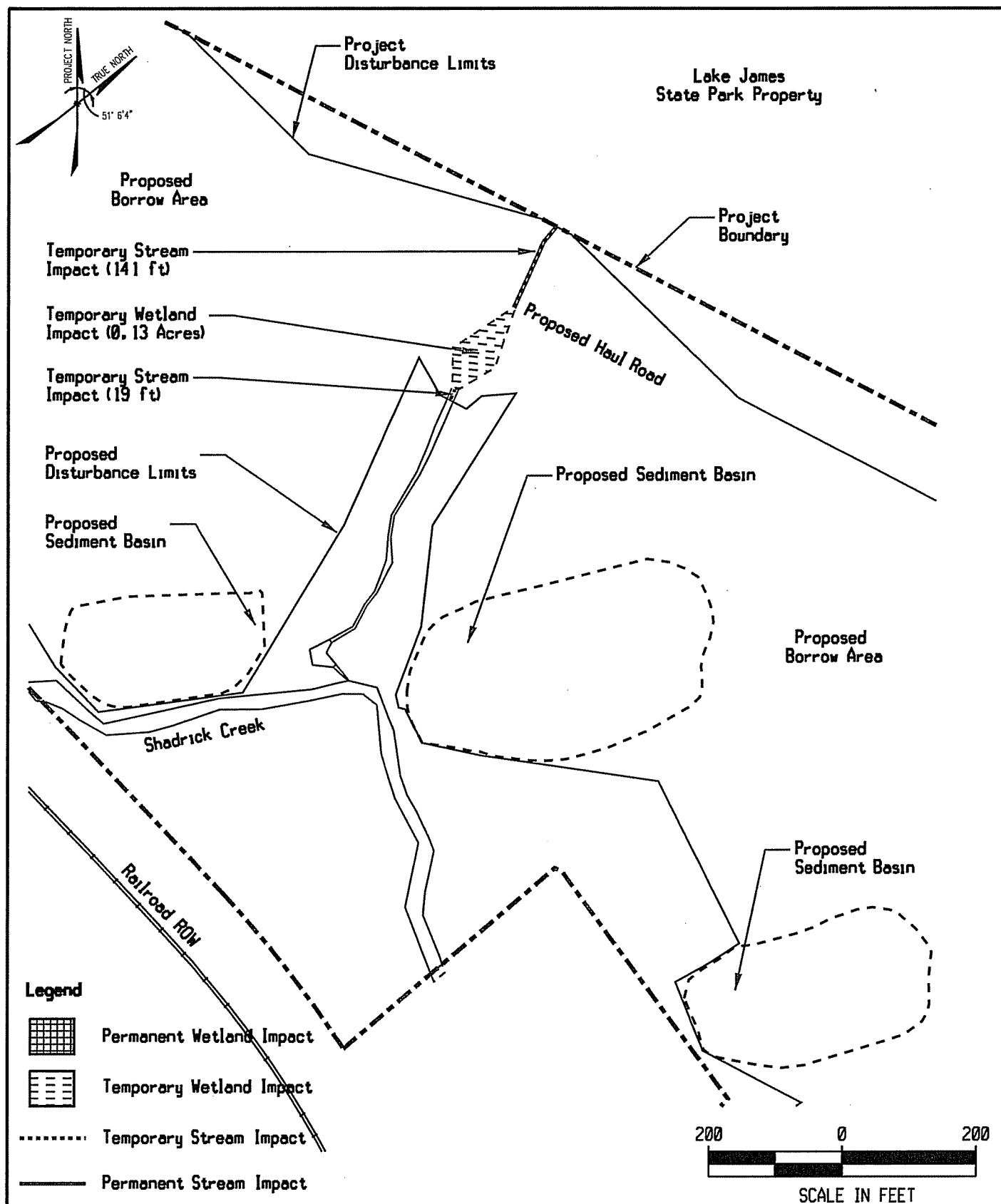
Figure 16

DATE

04-11-07

REV

0



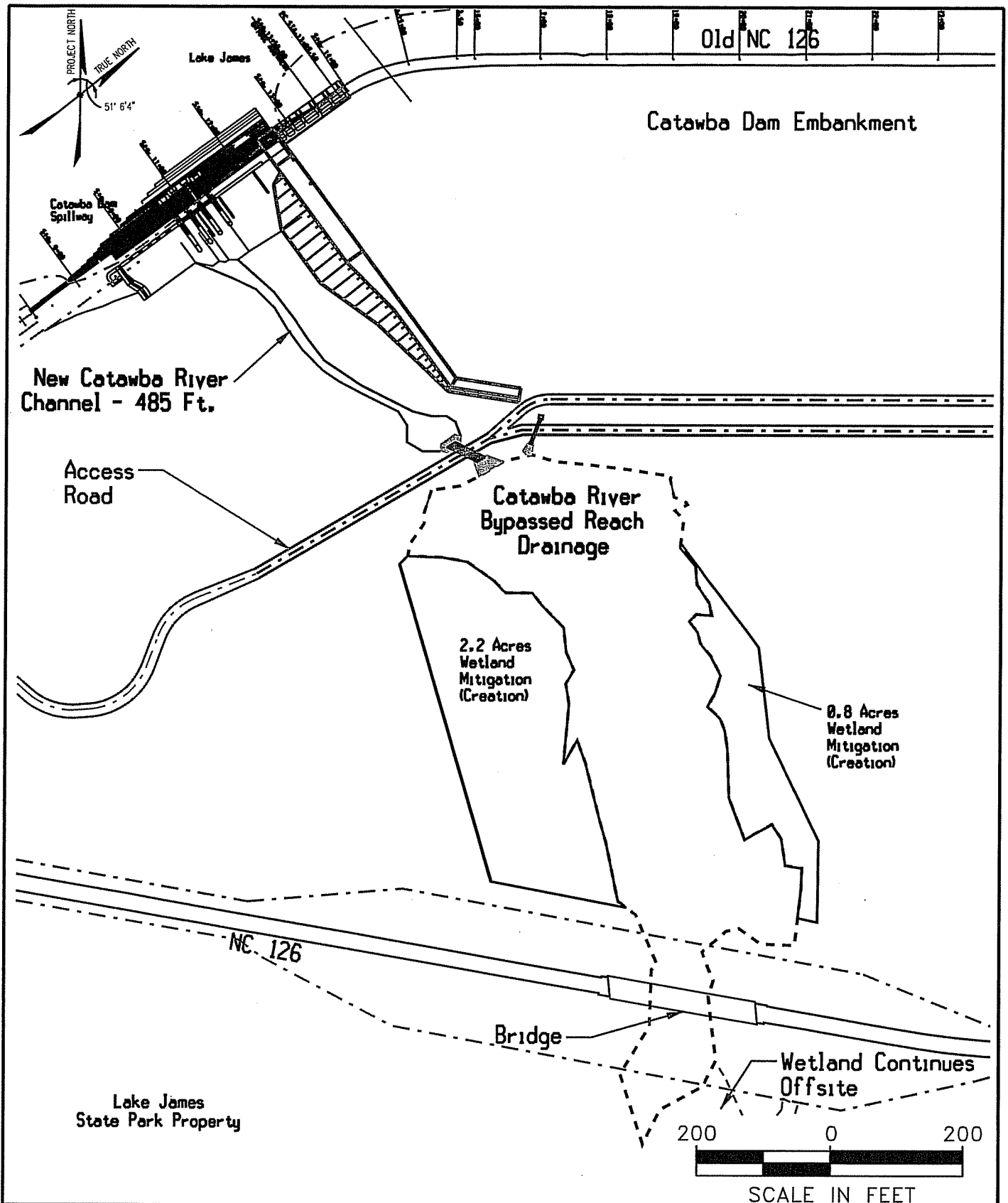
Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

400 South Tryon Street • Charlotte, NC 28285

DUKE ENERGY CAROLINAS, LLC.
BRIDGEWATER HYDRO PROJECT

Figure 17
Shadrick Creek Drainage
Impact map

FILE NAME	DATE	REV
Figure 17	04-11-07	0



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

400 South Tryon Street • Charlotte, NC 28285

DUKE ENERGY CAROLINAS, LLC.
BRIDGEWATER HYDRO PROJECT

Figure 18
Catawba River
Bypassed Reach Drainage
Jurisdictional Map

FILE NAME	DATE	REV
Figure 18	04-11-07	0